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AUTHOR Cowan, Nancy S.: And Others
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ABSTRACT

A communication profile of each student entering the Model Secondary School for the Deaf (MSSD) is composed of rankings in five areas: expressive manual communication including signing, fingerspelling, and synchronization: speech intelligibility: articulation: speech reading, including words and sentences: and audiometric test performance including pure-tone air conduction testing, audiometric speech testing, and impedance testing. The profile is used for appropriate placement as well as providing parents with realistic information about communication skills. The profiles of 86 students entering MSSD are graphed for all five areas. (CL)

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Communication Characteristics of Students Entering MSSD 1977-78

Nancy S. Cowan
Corliss R. Goger
Judith N. Marvich
Caryl Purdue

1978

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Communication Characteristics of Students Entering MSSD 1977-78

Introduction

All students entering MSSD are evaluated in several areas of communication skills. These areas are: (1) Expressive Manual Communication, including signing, fingerspelling, and synchronization; (2) Speech Intelligibility; (3) Articulation; (4) Speechreading, including words and sentences; and (5) Audiometric Tests, including pre-tone air conduction, speech awareness, most comfortable and uncomfortable levels, tympanometry and acoustic reflex thresholds, and Word Intelligibility by Picture Identification. A hearing aid evaluation is also summarized on a one-page profile form that may be appropriate for use by teachers, advisors, and parents (Attachment A_1).

This profile avoids incorrect initial class placements where a student cannot benefit from the instruction because of his/her particular communication skills. The profile also provides parents with realistic information about communication skills because exact test results are given. This gives a basis for discussion with the communication counselor when planning coursework for the student. The profile also provides baseline data on communication skills for later evaluation of individual students as well as for research purposes.

The information from this communication profile is used to aid:

a. *academic departments* in initial scheduling of students into classes where they can use their primary mode of communication.

b. *classroom teachers* in choosing specific classroom strategies that will effectively fit the communication skills of the entering student.

c. *Communication Department members* in:

   1. initial placement of students into required manual communication and introductory classes.

   2. later placement in communication courses based on skills, needs, and interests of the student. (This is a part of the Communication Counseling Program which closely ties in with the profile.)

   3. obtaining baseline data for later comparison with changes in communication skills.

d. *academic advisors* in:

   1. understanding problems their advisees may bring to them that relate to their own communication and their understanding of teachers' and students' communication.

   2. completing the Individualized Educational Program (IEP) in consultation with the communication counselor.

e. *parents* in understanding the areas of communication skills that are evaluated at MSSD and the recommendations that are being made for their child.

It should be noted that information gained by this initial screening process is supplemented by further diagnostic evaluations when a student is seen for individual therapy in any of the following areas: speech production, speechreading, languages, and auditory training. This profile is not intended to be a sole assessment of a student's communication skills and it is not used as such.

Description of Data

The entering group of students for 1977-78 consists of 68 boys and girls who entered in August, two who entered in September, and 16 who entered in January. Evaluations for the 68 students were completed in August 1977. Evaluations for the other 18 were completed in January 1978.

An attempt was made to test each student in all areas of communication skills. As this is not always possible, the number of students may vary slightly from group to group. For instance, students with severe visual handicaps cannot be given the speech-reading evaluation and this lowers the number of students from the total of 86 students on which this paper is based.

Expressive Manual Communication Skills

The student views a videotaped story. The student is then videotaped retelling the story in his/her own words using his/her most comfortable communication mode. This procedure is repeated; however, the second time, the student is asked to sign in straight English using his/her voice. The videotapes are evaluated to examine the student's signing abilities in ASL and in English.

The evaluator rates the student in three areas (see Hypothetical Student Summary, Attachments A and A_1): signing, fingerspelling, and synchronization. Table 1 shows the descriptors used for rating expressive signing.

Expressive Signing
1 - Unable to sign at all.
2 - Able to sign only simple, common words.
3 - Able to communicate some needs/desires.
4 - Able to communicate most needs/desires.
5 - Able to sign everything he/she wants to say.
6 - Cannot rate.

Table 1. Rating Scale for Expressive Signing Skills.

Figure 1 shows the percentage of students who were assigned each rating. The results show that 30% of entering students are skilled signers before coming to MSSD. An additional 47% can communicate most needs and desires effectively through manual communication. Approximately 23% are assigned instruction in manual communication during their first team.

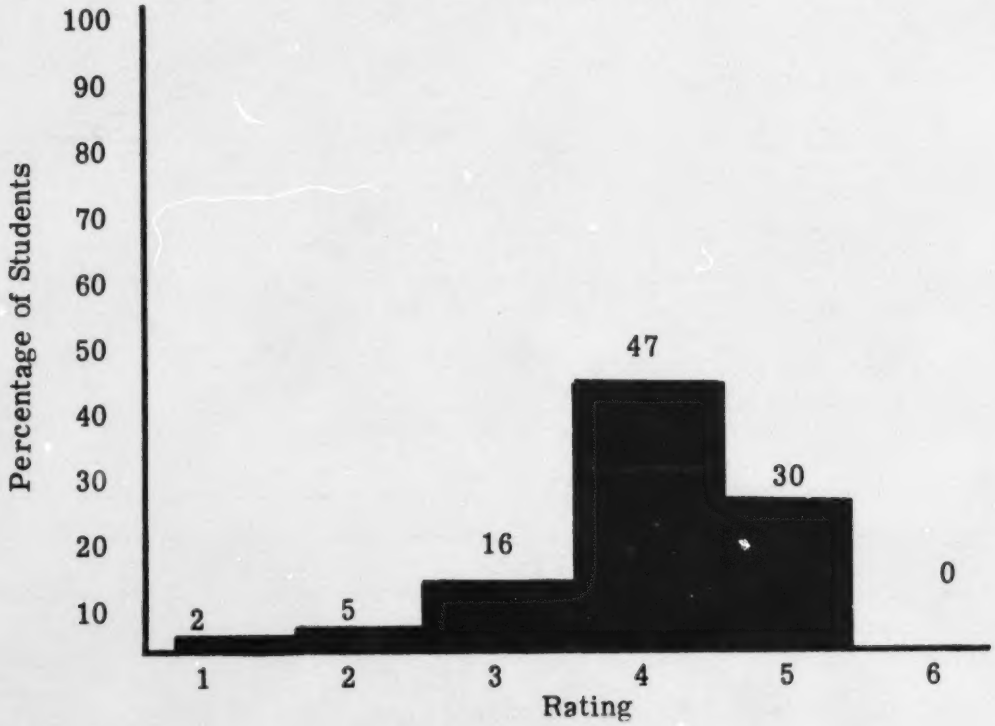

Figure 1. Percentage of students receiving each rating on Expressive Signing skills (N = 86).

Table 2 shows the descriptors used for evaluating expressive fingerspelling skills.

Expressive Fingerspelling
1 - Cannot fingerspell at all.
2 - Can fingerspell his/her name only.
3 - Can fingerspell simple, common words.
4 - Can fingerspell most words.
5 - Can fingerspell almost all words.
6 - Cannot rate.

Table 2. Rating scale for Expressive Fingerspelling skills.

Figure 2 shows the percentage of student receiving each rating on fingerspelling. Again, we find that a larger percentage of our entering students are already skilled at

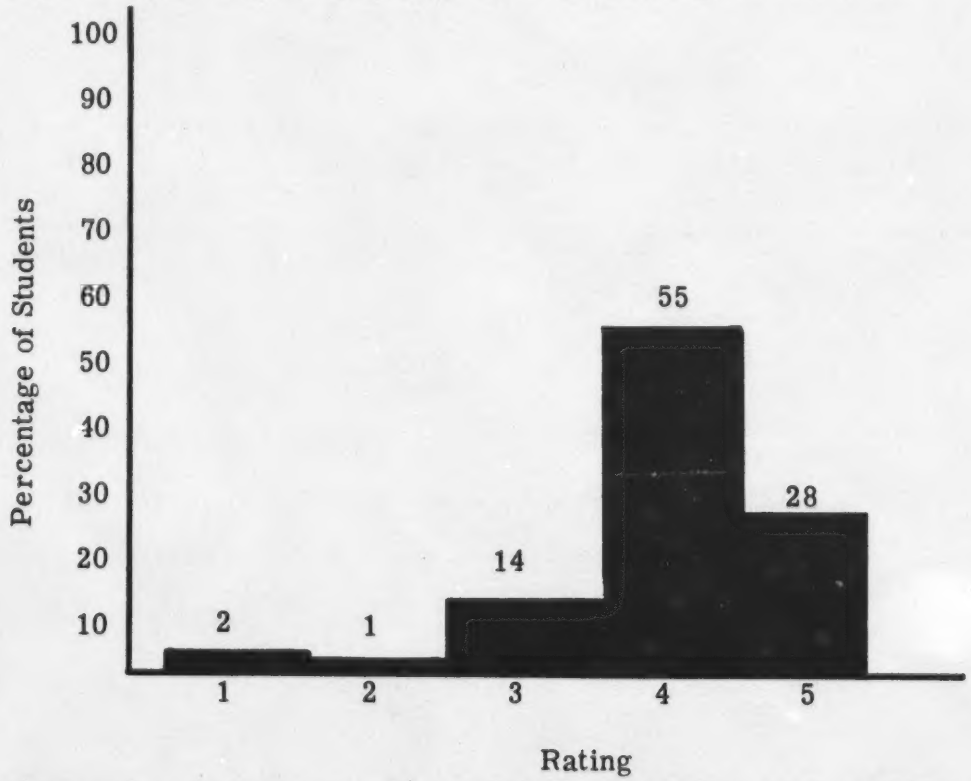

Figure 2. Percentage of students receiving each rating on Fingerspelling skills (N = 86).

fingerspelling (83%). About 17% need more practice with fingerspelling in order to communicate effectively in that mode.

Table 3 shows the descriptors used for evaluating synchronization skills.

Synchronization
1 - Signs and fingerspelling cannot be understood. No indication or point of skills.
2 - Signs and fingerspelling are very difficult to understand and are characterized by gross clarity, speed, precision, and omission errors.
3 - Signs and fingerspelling are difficult to understand, with many errors of clarity, speed, precision, and omission.
4 - Signs and fingerspelling are easily understood, with the presentation and reception exhibiting some errors of clarity, speed, and precision.
5 - Signs and fingerspelling are easily understood and are not characterized by errors of clarity, speed, and precision.

Table 3. Rating Scale for Synchronization skills.

Figure 3 shows the percentage of students receiving each rating on synchronization. The percentages are similar to those in the other categories of signing and fingerspelling. About 69% enter MSSD with good skills in synchronization, while 31% need more practice in this area.

Additional data obtained in the manual communication evaluation shows that 80% of our entering students are right-handed and 20% shown left-handed dominance. The recommended

class placement for manual communication is as follows: 22% in Beginning Manual Communication, 29% in Intermediate Manual Communication, and 49% in Advanced Manual Communication.

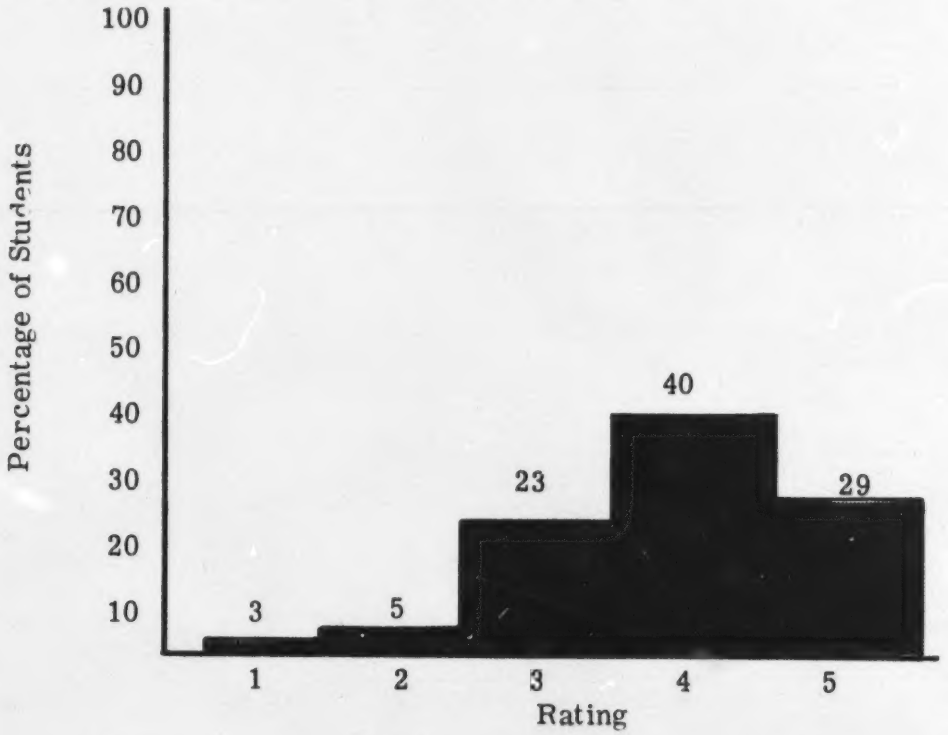

Figure 3. Percentage of students receiving each rating on Synchronization skills (N = 86).

Following is an analysis of the preferred mode of communication of the entering students:

ASL	25%
ASL/Speech	1%
ASL/Simultaneous	25%
PSE/Simultaneous	43%
PSE/Speech	2%
Fingerspelling/Simultaneous	1%
Gestures/Speech	1%
Speech	1%
MCE/Simultaneous	1%

ASL - American Sign Language
MCE - Manually Coded English
PSE - Pidgin Sign English

Speech Intelligibility

The student reads 10 sentences (randomly chosen from Clarke School sentences) and an audiotape recording is made. Three (or more) speech therapists listen to the recordings and write the sentences as they hear them. These sentences are then scored for words correct and an average numerical rating is obtained. The overall speech intelligibility rating is more subjective and is based on the articulation and voice aspects recorded on the scoring sheet. Data presented here do not include the 18 students evaluated in January. The scoring has not yet been completed for these students.

Table 4 shows the descriptors for the overall speech intelligibility ratings, and the percentages for words correct with their descriptors.

Speech Intelligibility Rating

Percent of Words Correct	Subjective Rating	Descriptor
0% - 20%	1	Speech cannot be understood.
20% - 40%	2	Speech is very difficult to understand.
40% - 60%	3	Speech is difficult to understand. However, after a listening period, content can be understood.
60% - 80%	4	Speech is intelligible with the exception of a few words or phrases.
80 - 100%	5	Speech is fully understood.

Table 4. Rating Scale for Speech Intelligibility.

Figures 5 and 6 illustrate speech intelligibility ratings of entering students. On the more subjective overall rating, 9% are completely understood, while 14% have only a few unintelligible words or phrases. Fourteen percent can be understood after a listening period. The discrepancy between the overall rating and the rating based on percentage of words understood and written by the raters appears to be due to the wording of the ratings. Students were given a "5" only if the raters thought they understood 100% of the speech sample. The number of 5's awarded on this basis corresponds closely to the number of students who actually received a 100% score on the sentences. On the overall ratings, it is more difficult to make fine discriminations between ratings, so that 3-4 and 4-5 are not as clearly scorable as the "number of words correct." However, these data suggest that approximately 60% of the entering students have speech that is very difficult to understand or is not intelligible at all.

These results are based on a taped speech sample, judged by three raters, and averaged for one composite score. As will be seen later, speech judged from an articulation test given in an individual setting is often more intelligible. This may be due to several factors. The visual cues available to the evaluator may be the principal reason, but the concern expressed by students over the audiotaping situation may also be a factor. It should be stressed that the speech intelligibility rating alone is not used for placement in therapy.

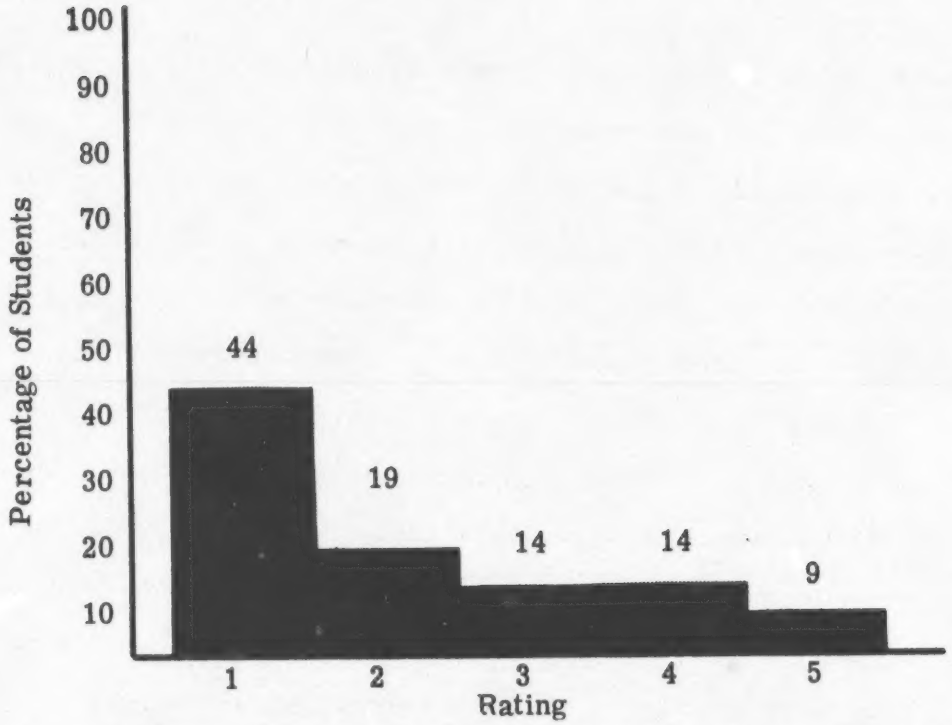

Figure 5. Percentage of students receiving each rating on Speech Intelligibility (N = 86).

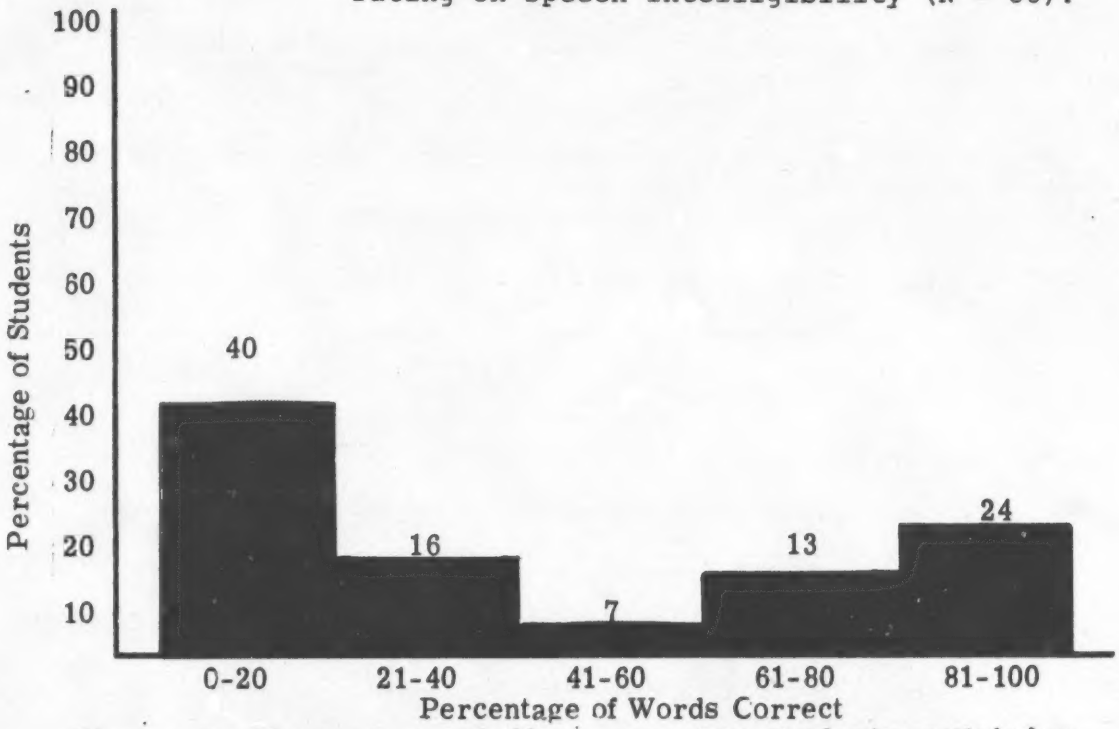

Figure 6. Percentage of first semester students receiving scores based on percentage of words correct (N = 68).

Articulation

The Templin-Darley Test of Articulation (screening portion) is used. This is a 50-item standardized test of articulation which indicates the student's specific articulation errors and identifies areas for further evaluation. Ordinarily, errors are described in the comment section of the profile and no "score" is recorded. For purposes of describing our population of entering students, scores based on number of errors have been tallied and are shown in Figure 7.

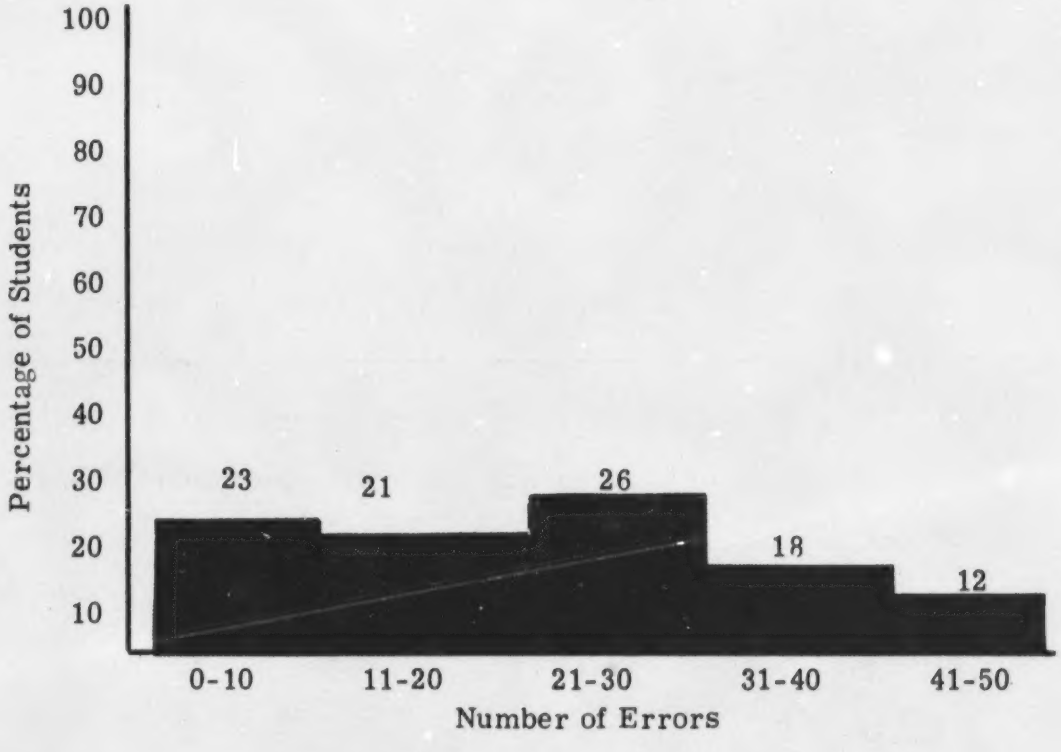

Figure 7. Percentage of students receiving scores based on number of errors on the Templin-Darley Test of Articulation, Screening Test (N = 82).

Scores on the screening test of articulation are relatively evenly distributed compared to intelligibility ratings for speech. A visual examination of the data suggests very little correlation between intelligibility rating and number of errors on the articulation test.

Sounds which are most often in error on the screening test are the sibilants--/ʃ/, /s/, /z/, /tʃ/, /dʒ/, and /ʒ/. Other frequent error sounds are /r/, /l/, /g/, /k/, and /s/ and /r/ blends. Substitutions of g/k and b/m also appear frequently. A complete analysis of error sounds is not performed until a student enrolls for speech therapy since that information is not routinely analyzed for all entering students.

Speechreading

The word and sentence forms of the Craig Lipreading Inventory are used. This test indicates the student's lipreading abilities for words and sentences and is easily administered to a group. This test is used because of its picture responses and normative information on hearing impaired adolescents.

Figures 8 and 9 show the results of the speechreading tests for words and sentences. The results are very similar. About 60% of our entering students have good lipreading skills when they are initially evaluated (70% words; 58% sentences). Approximately 35% of the students have average skills in obtaining information in sentences from visual cues. Immediate placement in speechreading courses is not required, but is recommended for students who might benefit from such instruction.

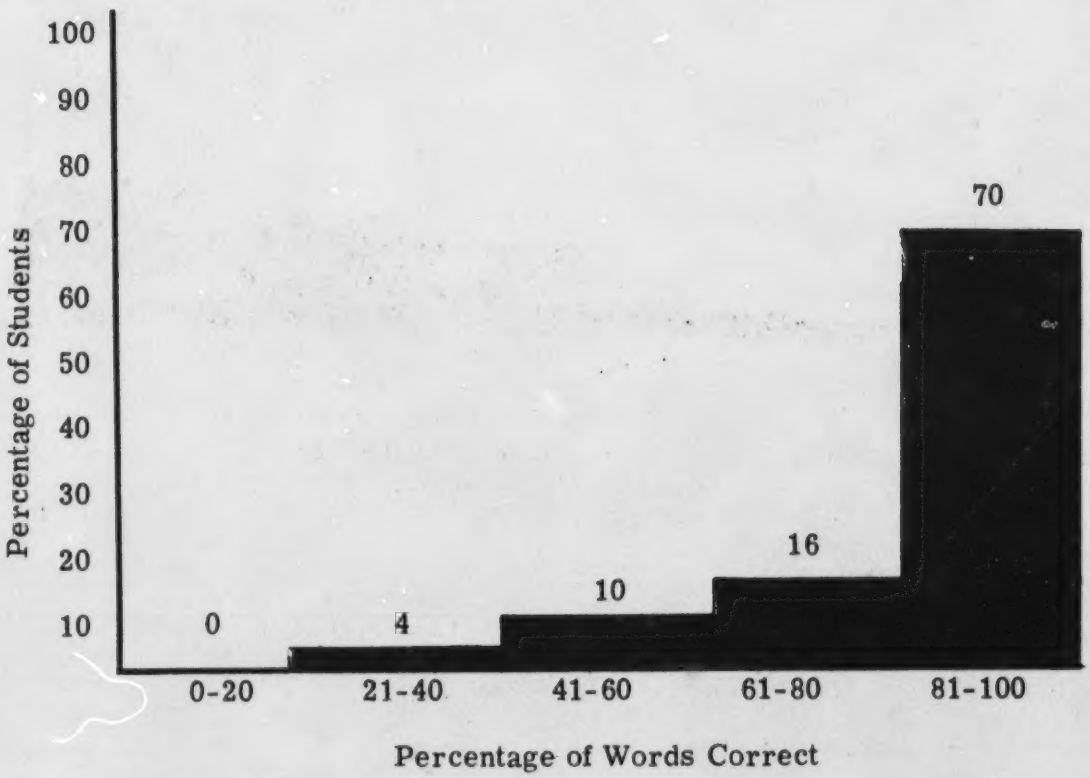

Figure 8. Percentage of students receiving scores on the Craig Lipreading Inventory (Words) based on percent correct (N = 85).

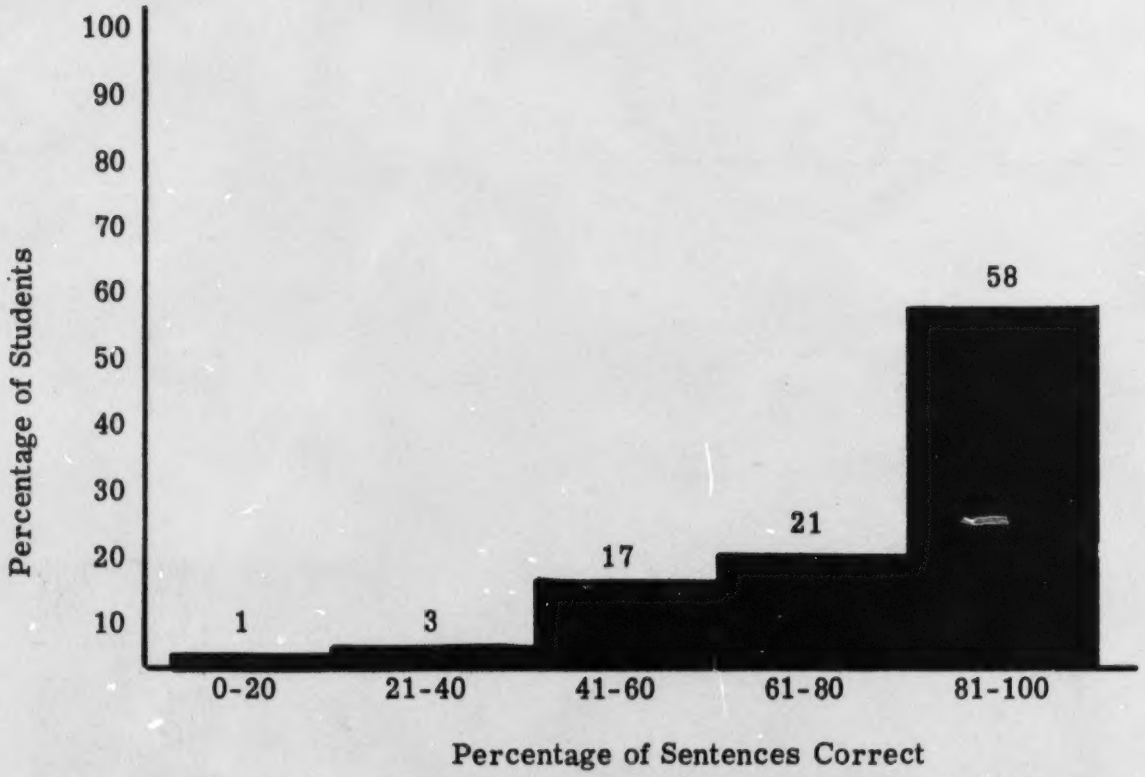

Figure 9. Percentage of students receiving scores on the Craig Lipreading Inventory (Sentences) based on percent correct (N = 85)

Audiometric Testing

Audiometric evaluations were carried out for 85 entering students. Of this number, 65% (or 55) were consistent hearing aid users, while 35% (or 30) were not.

The Communication Profile form includes the audiologist's impressions following the initial evaluation. These impressions usually include a statement of the degree and configuration of the hearing loss, middle ear functions, student's use of amplification, student's use of residual hearing for communication, and condition of hearing aids.

Following are brief descriptions of the various components of the audiometric evaluation (see also Attachment B).

Pure-Tone Air Conduction Testing Pure-tone thresholds were established as possible at octave intervals from 125 - 800 Hz, and at mid-octave intervals when determined necessary. All testing was carried out under phones in audiometric test suites, using Beltone 2-0-C clinical audiometers.

Figure 10 shows the range of pure-tone average in the better ear for all students tested. While 95% of the students fall within the range of severe-to-profound hearing losses (71 dB and greater), the majority (62%) fall within the range 81 - 100 dB.

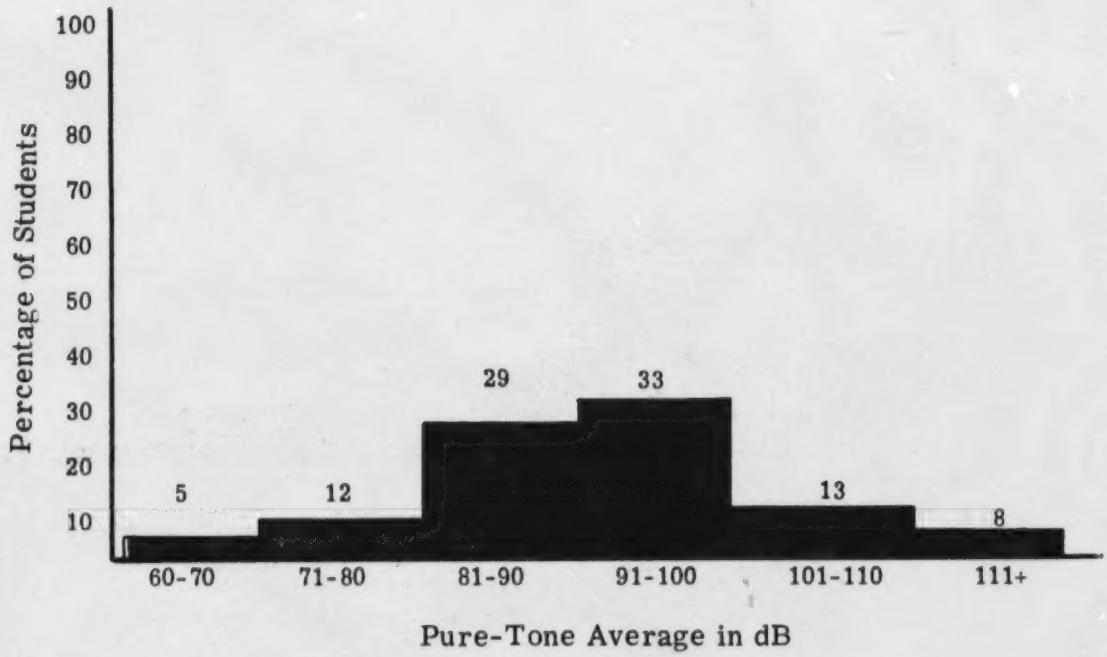

Figure 10. Better ear pure-tone average (N = 85).

Audiometric Speech Testing In an effort to find audiometric test instruments which yield meaningful information on the skills of our students, various tests are being tried. The Word Intelligibility by Picture Identification test (Ross and Lerman, 1971) is used to determine a speech discrimination score for each student. The range of scores for 80 students is shown in Figure 11. Five students could not be tested.

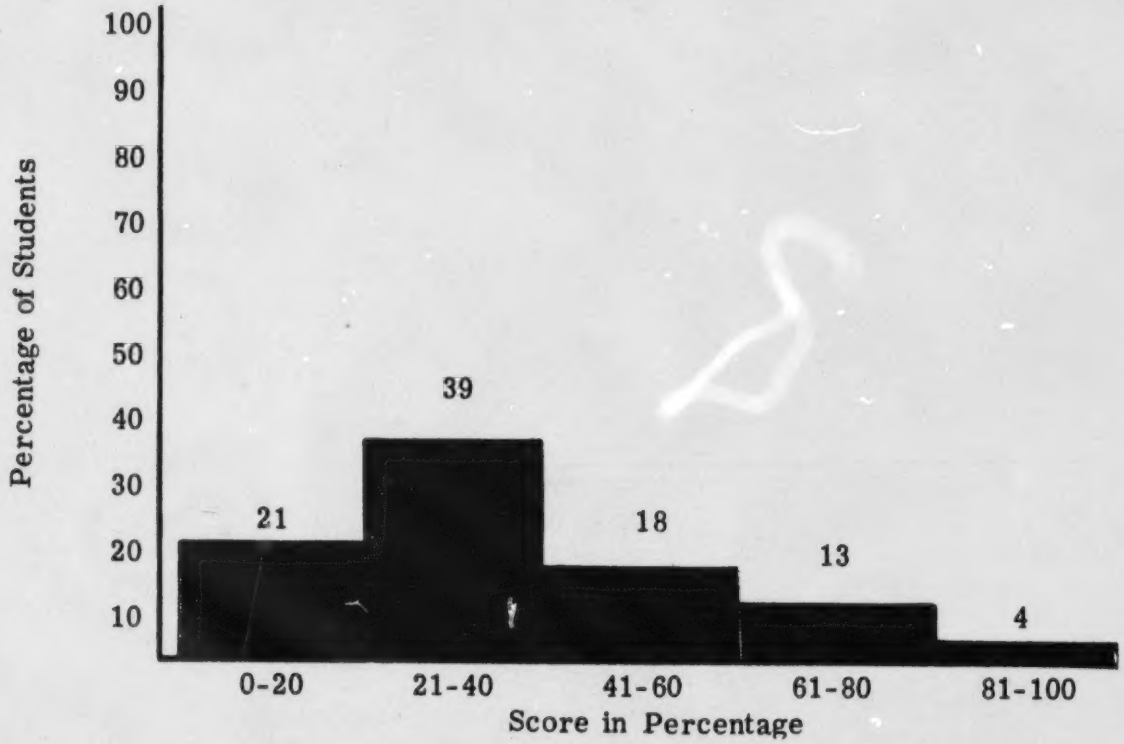

Figure 11. Word Intelligibility by Picture Identification scores (auditory cues only) (N = 80).

In addition to the WIPI, tests of spondee identification and of determination of same/different qualities in spondees are administered.

Impedance Testing Tympanometry and acoustic reflex testing are performed on each student to determine middle ear status. On the basis of this testing, six students were referred to the Gallaudet Health Service's consulting otologist for removal of excessive cerumen or investigation of possible middle ear pathology.

Hearing Aid Checks Audiometric (behavioral) and electroacoustic hearing aid checks are carried out for all entering students who bring their hearing aids to the test appointment. Of the students evaluated, eight hearing aids were malfunctioning in some way and were repaired by either MSSD's audio engineer or the appropriate factory.

Summary

The MSSD Communication Profile has been developed to provide useful information about each student's communication skills. It is meant to evaluate areas of communication which are important to consider in early class placement and in planning the Individualized Educational Program. The battery of tests includes Expressive Manual Communication, Speech Intelligibility, Articulation, Speechreading, and Audiometric Assessment. This information is supplemented by additional diagnostic information when the student enrolls in individual therapy or group classes in communication.

Although a composite rating of the communication skills of each student is not attempted, some group generalizations about the entering students may be made:

1) Nearly 70% can use manual communication to meet their needs effectively.

2) About 23% have reasonably intelligible speech, while 44% have unintelligible speech.

3) Approximately 60% exhibit good speechreading skills.

4) Ninety-five percent have hearing losses of greater than 70 dB in the better ear.

5) Approximately 75% have poor speech discrimination skills.

The Communication Profile functions as a screening tool for initial class placement and further enables the Communication Department to provide communication counseling and instruction designed to assist each student in developing those communication skills appropriate to his/her needs and goals.

Attachment A

COMMUNICATIONS SCREENING SUMMARY
(Hypothetical) *

Student Smith, Joe Jr. Date 8-23-77 Entry Date August, 1977

Date of Birth 7-4-62 Advisor J. Jones Communications Advisor N.C.

TEST	RESULT/ SCORE	COMMENTS (Test Reliability, Behaviors Noted, Further explanation of results, etc.)
1. Expressive Manual Communication		Preferred Mode of Communication: ASL/Simultaneous Able to communicate most needs/desires Can fingerspell most words. Course Placement Recommendations: Intermediate Manual Comm.
Signing	3	
Finger-spelling	3	
Synchro-nization	3	
2. Speech Intelli-gibility	2.0	Speech is very difficult to understand.
3. Templin-Darley Test of Articulation		*Good speech sounds except for r and sibilants. Conversation speech much less intelligible than in artic. testing situation.*
4. Craig Lip-reading Inventory		*Good lipreading skills.* *Depends on visual cues.*
Word Score	29 88%	
Sentence Score	19 77%	

Audiological Impressions - 1. Severe to profound hearing loss, bilaterally.
2. Normally functioning middle ear systems.
3. Reliance on hearing aid; good hearing aid user.
4. Good use of visual and combined auditory-visual cues.

REC - 1. V Daily hearing aid use.
2. Use voice and combine with visual cues.

* As completed by five evaluators

Attachment A_1

COMMUNICATIONS SCREENING SUMMARY

Student _____ Date _____ Entry Date _____

Date of Birth _____ Advisor _____ Communications Advisor _____

TEST	RESULT/ SCORE	COMMENTS (Test Reliability, Behaviors Noted, Further explanation of results, etc.)
1. Expressive Manual Communication Signing Finger-spelling Synchro-nization		
2. Speech Intelli-gibility		
3. Templin Darley Test of Articulation		
4. Craig Lip-reading Inventory Word Score Sentence Score		

Audiological Impressions -

Attachment B

DESCRIPTION OF EVALUATION COMPONENTS

Expressive Manual Communication Evaluation

The student views a video-taped story and is asked to retell the story in his/her own words using his/her most comfortable communication mode. He/she is video-taped. This is repeated; however, the second time, he/she is asked to sign in straight English using his/her voice. The student video-tapes are evaluated. The purpose of the evaluation is to examine the student's signing abilities in ASL and in English.

Speech Intelligibility Rating

The student reads 10 sentences (Clarke School sentences) and an audio tape recording is made. Three (or more) speech therapists listen to the recording and write the sentences as they hear them. These sentences are scored for words correct and an average numerical rating is obtained. The overall speech intelligiblity rating is more subjective and is based on the articulation and voice aspects recorded on the scoring sheet.

Articulation Testing

The Templin-Darley Test of Articulation (screening portion) is used. This is a 50-item standardized test of articulation which indicates the student's specific articulation errors and identifies areas for further evaluation.

Speechreading Evaluation

The word and sentence forms of the Craig Lipreading Inventory are used. This test indicates the student's lipreading abilities for words and sentences and is easily administered to a group. This test is used because of its picture responses and normative information on hearing impaired teenagers.

Audiological Battery

Students receive a battery consisting of pure-tone air conduction; speech awareness, most comfortable and uncomfortable levels; tympanometry and acoustic reflex thresholds; and word intelligibility by picture identification tests. In addition, we are experimenting with vowel discrimination, spondee identification and same/different tests. An electroacoustic and behavioral hearing aid check is also administered.